

WHAT IS CLAIMED:

1 1. An additive for use in making a rubber
2 elastomer, the additive comprising:
3 at least 20% by weight and up to about 29% by
4 weight of gray slate flour;
5 at least 18% by weight and up to about 28% by
6 weight of corn starch;
7 at least 4% by weight and up to about 8% by weight
8 of liquid polyester;
9 at least 10% by weight and up to about 20% by
10 weight of calcium carbonate; and
11 at least 8% by weight and up to about 15% by
12 weight of silica gel;
13 wherein the aggregate amount of the gray slate
14 flour, cornstarch, liquid polyester, calcium carbonate
15 and silica gel totals 100%; and
16 wherein the additive is combined with a rubber
17 elastomer to create a rubber elastomer composition.

1 2. The additive of claim 1, wherein the additive
2 comprises about 29% by weight of gray slate flour.

1 3. The additive of claim 2, wherein the additive
2 comprises about 28% by weight of corn starch.

1 4. The additive of claim 2, wherein the additive
2 comprises about 8% by weight of liquid polyester.

1 5. The additive of claim 4, wherein the additive
2 comprises about 20% by weight of calcium carbonate.

1 6. The additive of claim 5, wherein the additive
2 comprises about 15% by weight of silica gel.

1 7. The additive of claim 6, wherein the silica
2 gel is in the form of pellets.

1 8. The additive of claim 6, wherein the silica
2 gel is in the form of powder.

1 9. The additive of claim 1, wherein the rubber
2 elastomer is selected from the group consisting of
3 natural rubber, isoprene, chloroprene, halo-butylys, SBR
4 rubber, butyl rubber, neoprene, epichlorohydrin rubber,
5 polysulfonated rubber, silicone rubber and mixtures
6 thereof.

1 10. A method of producing an additive for a
2 rubber elastomer, comprising the steps of:
3 combining about 29% by weight of gray slate flour,
4 about 28% by weight of corn starch, about 8% by weight
5 of liquid polyester, about 20% by weight of calcium
6 carbonate, and about 15% by weight of silica gel;
7 mixing the components together;
8 allowing the components to react to form an
9 additive that increases the tensile strength, and
10 crescent tear of rubber elastomers; and
11 adding the additive to a rubber elastomer.

1 11. The method of claim 10, wherein the rubber
2 elastomer is selected from the group consisting of
3 natural rubber, isoprene, chloroprene, halo-butylys, SBR
4 rubber, butyl rubber, neoprene, epichlorohydrin rubber,

5 polysulfonated rubber, silicone rubber and mixtures
6 thereof.

1 12. A rubber elastomer composition comprised of:
2 an additive, wherein the additive comprises;
3 about 29% by weight of gray slate flour, about 28%
4 by weight of cornstarch, about 8% by weight of liquid
5 polyester, about 20% by weight of calcium carbonate,
6 and amount 15% by weight of silica gel; and
7 a rubber elastomer, wherein the rubber elastomer
8 is selected from the group consisting of natural
9 rubber, isoprene, chloroprene, halo-butyls, SBR rubber,
10 butyl rubber, neoprene, epichlorohydrin rubber,
11 polysulfonated rubber, silicone rubber and mixtures
12 thereof.

1 13. An additive for use in making a rubber
2 elastomer, the additive comprising:
3 from about 10 to about 30% by weight gray slate
4 flour;
5 from about 10 to about 35% by weight corn starch;
6 from about 5 to about 15% by weight epoxidized
7 soybean oil;
8 from about 10 to about 40% by weight calcium
9 carbonate; and
10 from about 5 to about 15% by weight of a fatty
11 acid selected from the group consisting of stearic acid
12 and oleic acid;
13 wherein the aggregate amount of the gray slate
14 flour, corn starch, epoxidized soybean oil, calcium
15 carbonate and fatty acid totals 100%; and
16 wherein the additive is combined with a rubber
17 elastomer to create a rubber elastomer composition.

1 14. The additive of claim 13, wherein the
2 additive comprises about 25% by weight of gray slate
3 flour.

1 15. The additive of claim 14, wherein the
2 additive comprises about 25% by weight of corn starch.

1 16. The additive of claim 15, wherein the
2 additive comprises about 5% of epoxidized soybean oil.

1 17. The additive of claim 13, wherein the
2 additive comprises:
3 from about 20 to about 30% by weight gray slate
4 flour;
5 from about 20 to about 30% by weight corn starch;
6 from about 5 to about 10% by weight epoxidized
7 soybean oil;
8 from about 20 to about 37% by weight calcium
9 carbonate; and
10 from about 8 to about 15% by weight of a fatty
11 acid selected from the group consisting of stearic acid
12 and oleic acid;
13 wherein the aggregate amount of the gray slate
14 flour, corn starch, epoxidized soybean oil, calcium
15 carbonate and fatty acid totals 100%; and
16 wherein the additive is combined with a rubber
17 elastomer to create a rubber elastomer composition.

1 18. The additive of claim 13, wherein the
2 additive comprises:
3 about 25% by weight gray slate flour;
4 about 25% by weight corn starch;

5 about 5% by weight epoxidized soybean oil;
6 about 35% by weight calcium carbonate; and
7 about 10% by weight of a fatty acid selected from
8 the group consisting of stearic acid and oleic acid;
9 wherein the aggregate amount of the gray slate
10 flour, corn starch, epoxidized soybean oil, calcium
11 carbonate and fatty acid totals 100%; and
12 wherein the additive is combined with a rubber
13 elastomer to create a rubber elastomer composition.

1 19. The additive of claim 13, wherein the rubber
2 elastomer is selected from the group consisting of
3 natural rubber, isoprene, chloroprene, halo-butyls, SBR
4 rubber, butyl rubber, neoprene, epichlorohydrin rubber,
5 polysulfonated rubber, silicone rubber and mixtures
6 thereof.

1 20. A method of producing an additive for a
2 rubber elastomer, comprising the steps of:
3 combining from about 10 to 30% gray slate flour,
4 from about 10 to about 35% corn starch, from 5 to about
5 15% epoxidized soybean oil, from about 10 to about 40%
6 calcium carbonate and from about 5 to about 15% of a
7 fatty acid selected from the group consisting of
8 stearic acid and oleic acid;
9 mixing the components together;
10 allowing the components to react to form an
11 additive; and
12 adding the additive to a rubber elastomer.

1 21. The method of claim 20, wherein said
2 elastomer is selected from the group consisting of
3 natural rubber, isoprene, chloroprene, halo-butyls, SBR
4 rubber, butyl rubber, neoprene, epichlorohydrin rubber,
5 polysulfonated rubber, silicone rubber and mixtures
6 thereof.

1 22. A rubber elastomer composition comprised of:
2 an additive, wherein the additive comprises:
3 gray slate flour, corn starch, epoxidized soybean
4 oil, calcium carbonate, and a fatty acid selected from
5 the group consisting of stearic acid and oleic acid;
6 and
7 a rubber elastomer selected from the group
8 consisting of natural rubber, isoprene, chloroprene,
9 halo-butyls, SBR rubber, butyl rubber, neoprene,
10 epichlorohydrin rubber, polysulfonated rubber, silicone
11 rubber and mixtures thereof.

1 23. The composition of claim 22, wherein said
2 additive comprises from about 10 to 30% gray slate
3 flour, from about 10 to about 35% corn starch, from 5
4 to about 15% epoxidized soybean oil, from about 10 to
5 about 40% calcium carbonate and from about 5 to about
6 15% of fatty acid selected from the group consisting of
7 stearic acid and oleic acid.

1 24. An additive for use in making a rubber
2 elastomer, the additive comprising:

3 from about 10 to about 30% by weight of a
4 comminuted shale/slate predominately formed of
5 aluminum, magnesium and/or iron silicates;

6 from about 10 to about 35% starch;

7 from about 5 to about 15% of a reactive resin;
8 from about 10 to about 40% of a metal carbonate;
9 from about 5 to about 15% of an acidic component
10 selected from the group consisting of silica gel and
11 fatty acids;

12 wherein the aggregate amount of the comminuted
13 shale/slate, starch, reactive resin, metal carbonate
14 and acidic component totals 100%; and

15 wherein the additive is combined with a rubber
16 elastomer to create a rubber elastomer composition.

1 25. The composition of claim 24, wherein said
2 resin is liquid polyester resin.

1 26. The composition of claim 24, wherein said
2 resin is selected from the group consisting of octyl
3 epoxy tallate, epoxidized natural rubber, epoxidized
4 Bisphenol A, styrene oxide, 1,2-epoxy-3-phenoxypropane,
5 epoxidized soybean oil and epoxidized linseed oil.

1 27. A method of producing an additive for a
2 polymeric material comprising the steps of:
3 combining from about 10 to 30% gray slate flour,
4 from about 10 to about 35% corn starch, from 5 to about
5 15% epoxidized soybean oil, from about 10 to about 40%
6 calcium carbonate and from about 5 to about 15% of a
7 fatty acid selected from the group consisting of
8 stearic acid and oleic acid;

9 mixing the components together;

10 allowing the components to react to form an
11 additive; and

12 adding the additive to a polymeric material.